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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/714,341

11/16/2000

Hans Eberle

1004-4253-1

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11/12/2004

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EXAMINER

NGUYEN, HANH N

ART UNIT

PAPER NUMBER

2662

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/714,341

Applicant(s)

EBERLE ET AL.

Examiner

Hanh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-23,27-31 and 33-37 is/are rejected.
- 7) ☒ Claim(s) 3,24-26 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 19, 20 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 31, it is not clear what is meant by “the first and the second group of resources being **mutually exclusive**”.

Claims 2-7 and 32-34 are rejected because they depend on claims 1, 23 and 31 respectively.

In claim 19, it is not clear what is meant by “a vector including the preallocated requests and the regular requests from the sources on the network”.

Claim 20 is rejected because it depends on claim 19.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-18, 23-31 and 33-37 are rejected under 35 USC 103(a) as being unpatentable over Bonomi et al.(Pat. 5,838,681) in view of Hayter et al.(Pat. 5,577,035).

In claims 1, 8, 9, 23 and 31 and 35, Bonomi et al. discloses a CPU 96 (arbiter) provides predetermined port capacity (allocating a first resource) in accordance with requirement of user of a particular port for a fixed period of time (in accordance with first request for a time period). Additional capacity can be reallocated as needed (subsequently allocating a second resource). See col.8, lines 49-58. Bonomi et al. does not disclose the second resource is allocated in accordance with regular requests. Hayter et al. discloses cells in respective queues A, B, C, D, E (see Fig.1) is allocated respective slots (first and second resource/ slot allocation) to transmit via switching node 25 (Fig.4) at a fraction of total transmission rates (understood as first and second resource) (see Fig.5 & 6) in accordance with bandwidth request on line 34 (subsequently allocating first resource and second resource in accordance with regular requests). According to the specification, page 7, line 24 to page 8, line 2, “regular request” is asynchronous request for non-period data. The slot allocation in Fig.6 does not occur periodically. Therefore, the second resource is allocated in response to regular request. See col.5, lines 10-65. Therefore, it would have been obvious to one ordinary skill in the art to implement node 14 of Bonomi et al. to allocate second resource in response to non-period request suggested by Hayter et al. The motivation is to allocate resources for both period request and non-period requests.

In claim 2, Bonomi et al. discloses allocated resource is connections between work stations 12 (resource requested are data paths through network). See Fig.1

In claim 5, 7, 13, 29 and 34, Bonomi et al. discloses that the data is sent on a periodic basis with each time slot, so this implies that the request was for an isochronous-type of time slot. See Fig.7.

In claims 10, Bonomi et al. shows, in Fig.8, an example where the scheduling is conflict free. See col.13, lines 10-20.

In claim 12, Bonomi et al. does not expressly disclose implementing the scheduling in software; however, this would have been obvious to one of ordinary skill in the art. One would have been motivated to do this because elements implemented in software are modified and upgraded with less cost compared to hardware modifications.

In claim 14, Bonomi et al. discloses port capacity is allocated periodically (period traffic is scheduled to be transferred). See col.8, lines 49-55.

In claim 15, Bonomi et al. does not expressly disclose sending multicast data. Hayter et al. discloses sending multicast cells throughout the network. See col. 6, lines 29-31. It would have been obvious to a person of ordinary skill in the art at the time of the invention to send multicast cells as taught by Hayter et al. in the system taught by Bonomi et al. If a source in Bonomi et al. wants to send cell to multiple destinations, then the most efficient way would be through multicasting. This would reduce some of the overhead that would be use associated with sending data on a purely individual basis to all of these destinations.

In claim 16, as mentioned previously, the data in Bonomi et al. can be scheduled on a periodic basis.

In claim 17, the limitation of this claim has been addressed in claim 1.

In claim 18, the limitation of this claim has been addressed in claim 21.

In claims 27 and 28, the limitations of these claims have been addressed in claim 1.

In claims 4, 6, 33 and 36, Bonomi et al. discloses, in Fig.7, port capacity (slot) is allocated periodically (first request is based on periodic basis). See col. 8, lines 49-55. The second request has been disclosed by Hayter et al. on claim 1.

In claims 11 and 37, the limitations of these claims have been addressed in claim 1.

In claim 30, Bonomi et al. discloses isochronous data reserved for transferring in claim 5, but does not disclose multicast data transferred across the network. Hayter et al. discloses multicast traffic cell transferred across network switch (see Abstract). Therefore, it would have been obvious to one ordinary skill in the art to modify the Bonomi et al. to transfer multicast data across network as suggested by hayter et al. so that maximum resource can be used at the same time.

Claims 21 and 22 are rejected under 35 USC 103(a) as being unpatentable over Bonomi et al.(Pat. 5,838,681) in view of Hayter et al.(Pat. 5,577,035), and further in view of Bauman et al. (Pat. 6,160,812).

In claim 21, Bonomi et al. discloses a CPU 96 (receiving means)receives a predetermined schedule (means for receiving a precalculated schedule). See col.8, lines 60-65. Hayter et al. discloses, in Fig.4, resource allocation unit 37 that receive requests for non-period slots (means for receiving regular request). See col.4, lines 52 to col.5, line 20. Bonomi et al. and Hayter et al. do not disclose means for allocating resources in the precalculated schedule priority over the regular request. Bauman et al. discloses, in Fig.20, a scheduler that accesses requests in a queue and allocates resources to a highest priority request (means for allocating resources in the precalculated schedule priority). See col.18, lines 25-40. Therefore, it would have been obvious to one ordinary skill in the art to modify the CPU 96 (scheduler) of Bonomi et

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al. to allocate resource to priority request over regular request in order to enhance necessary data transmitting and to avoid data congestion when the priority data need to be transmitted first.

In claim 22, Bonomi et al. discloses, in Fig.1, work stations 12 (input and output nodes) coupled to a network comprising switch node 14 (a network switch) via physical paths (transport mechanism).

Allowable Subject Matter

Claims 3, 24-26, 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claims 3 and 32, the prior art does not disclose receiving the first request for the first resource in a centralized scheduler, the centralized scheduler residing in one of a plurality of requesters on the communication network; and receiving the regular requests at a centralized arbiter separated from the centralized scheduler.

In claim 24, the prior art does not disclose the first portion is reserved in a scheduler separated from an arbiter, the arbiter allocating the second portion, the scheduler providing a schedule to the arbiter indicating the reserved first portion.

Response to Arguments

Applicant's arguments with respect to claims 1-37 have been considered. Claims 3, 24-26 and 32 are objected. Claims 1, 2, 4-23, 27-31 and 33-37 are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Calvignac (US 6,370,148) and Takahui et al. (US 4,792,944) disclose systems that either choose which resource should be sent or how the time slots in a given system should be used.

Lund et al. (Pat.5517495) discloses Fair Prioritized Scheduling in an Input-Buffered Switch.

Mc Keown (Pat. 5500858) discloses Method and Apparatus for Scheduling Cells in an Input Queued Switch.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 571 272 3092. The examiner can normally be reached on M-F, 9-5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hasan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pe-direct.uspto.gov>. Should you have questions on access to the Private PMR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hanh Nguyen

A handwritten signature in black ink, appearing to read 'Hanh Nguyen', with a stylized, cursive script.

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November 10, 2004